

The following papers were read :—

1. Explanation of the Plan adopted for preparing an "Index Generum et Specierum Animalium." By C. DAVIES SHERBORN, F.Z.S.

[Received June 2, 1896.]

The following description of the work of preparing an Index to the generic and specific names of animals, both recent and fossil, which was commenced by the author in July 1890, has been prepared for the Society, at the request of Sir William Flower, Mr. Slater, and Dr. Henry Woodward :—

The difficulty of finding accurate and reliable lists of the species of any particular genus was pointed out by Darwin years ago, and impressed itself so strongly on that naturalist that he personally endowed the undertaking which we know as the 'Index Kewensis,' recently brought to so successful a conclusion by Benjamin Daydon Jackson. In this book of reference there are some 600,000 generic and specific names of flowering plants. The botanist has now a key to the literature of Phanerogams for 150 years within covers, and all difficulty in keeping pace with present and future descriptions of new phanerogamic plants has been removed.

It is quite otherwise with zoological generic and specific names. Agassiz, Marshall, Scudder, and others have partially catalogued the genera ; Waterhouse has listed the genera of birds ; H. G. Bronn, John Morris, and, more recently, R. Etheridge have provided lists of fossil species. But no one book including references to all names that have been given to fossil and recent animals has yet been attempted. The vastness of the record is appalling, but given time all difficulties disappear.

The work now commenced by the German Zoological Society, which was described before this Society at a recent meeting, and known as 'Das Tierreich,' will be familiar to all present ; and it has been suggested that a brief account of the 'Index Generum et Specierum Animalium' should be put on record in the same manner.

In May 1890 a letter appeared in 'Nature' and in 'La Feuille des Jeunes Naturalistes,' from the author, setting forth a scheme for the compilation of such a work, and inviting suggestions for improved details or other matter. Beyond friends interested at the British Museum, those who offered valuable suggestions were David Sharp, Alfred Newton, Sven Lovén, and Victor Carus. It was therefore obvious that the details were satisfactory to those interested, and work was commenced on July 1st, 1890.

Since that date recording has steadily progressed (circumstances have restricted the time at disposal to an amount equivalent to three years) and a total of 130,000 slips have been stored away in the alphabetical order of genera. Notices of the progress of the work have appeared in 'Nature,' vol. xlv. p. 207 (1891), and 'Natural Science,' vol. iii. p. 379 (1893), and the manuscript has been

frequently referred to by those in need of information at the British Museum and elsewhere.

The following is a reprint of the original set of rules :—

(1) The earliest reference is to date from the twelfth edition of Linnæus, 1766.

(2) The last reference to close with December 31, 1899.

(3) The names of genera and species to be given in one alphabetical sequence, and accompanied by a reference to the original source.

(4) The names of species of each genus to be also quoted in alphabetical order under that genus.

(5) No attempt at synonymy to be given; but, to assist reference, the various genera in which a species has from time to time been placed to be indicated under that species.

(6) Pre-Linnæan names to be quoted as founded by the author first using them after 1766 :—e. g., *Echinocorys*, Leske, 1778 (*ex* Klein, 1734). Should a pre-Linnæan species or genus have been re-named after 1766, before the post-Linnæan use of that pre-Linnæan name, the new name is to stand. [References will be given to Artdi, Brisson, and Scopoli, in accordance with British Association rules.]

As soon as the work commenced it was found advisable to adopt the 10th edition of the 'Systema' as a starting point, instead of the 12th. The reasons for this adoption need not be discussed here; the use of the 10th edition is fast becoming universal. This alteration caused a slight modification of several of the proposed rules. At the same time a reference is also given to the 12th edition of the 'Systema,' as it will be convenient to many people and will not increase the number of slips in any appreciable degree.

Each genus name and each species name is recorded on a separate slip, the original reference being quoted; and every time a species name is transferred to a new genus a separate slip is used, the quotation including a reference back to the original genus in which the species was first placed.

Each slip is made out in duplicate: one set being sorted up in alphabetical order of genera; and a second set being kept tied up as an index of the contents of the particular book quoted.

References are taken from one book at a time—i. e. a book is gone through from cover to cover—every genus and species, and every change of genus, being systematically recorded; thus completely disposing of that particular book, and ensuring the almost absolute certainty of every reference being taken. This system proves far more exact than the recording of any special group of animals at one time. It further permits of the printing from type of a reference to that particular book on each slip, and thus ensures the absolute accuracy of the reference with the sole exception of the page. The entries are made in black-lead pencil and black or blue carbon paper—both methods having proved to be quite indelible.

A particular paper has been chosen, known as "white rope," which presents the requisite stiffness for an edge-on arrangement

of slips, the toughness necessary for constant handling, a surface equally convenient for pencil and carbon paper, and a cheapness of 1s. 2d. per 1000 slips. The size of slip employed is 127×63 mm. ($5 \times 2\frac{1}{2}$ inches).

Nomina nuda are distinguished by the letters [*n. n.*].

Nomina nuda accompanied by figures by the letters [*n. et f.*].

In those cases where an author has described and figured a species some time after printing his *nomen nudum*, a reference is also given to the *nomen nudum*, when possible.

Particular attention has been paid to the date of publication of books, periodicals, and serials. This is a part of the work which demands considerable time and patience, but the results obtained fully justify the labour. The more important results as to dates already arrived at and published are:—

Pallas, P. S., *Icones Insect.* (See *Annals Mag.* ser. 6, vii. p. 236, 1891.)

Pallas, P. S., *Nov. spec. Glir.* (See *Annals Mag.* ser. 6, vii. p. 236, 1891.)

Schreber, J. C. D., *Säugethiere.* (See *Proc. Zool. Soc.* 1891, p. 587.)

Sowerby, *Genera Recent Shells.* (See *Annals Mag.* ser. 6, xiii. p. 370, 1894.)

Encyclopédie Méthodique. (See *Proc. Zool. Soc.* 1893, p. 582.)

Jardine and Selby, *Illustr. Ornith.* (See *Ibis*, 1894, p. 326.)

Moore, F., *Lepidopt. Indica.* (See *Annals Mag.* ser. 6, xi. 1893, p. 260, and ser. 6, xiv. 1894, p. 464.)

Siebold, P. F. von., *Fauna Japonica.* (See *Proc. Zool. Soc.* 1895, p. 149.)

The date of publication of a species is taken to be that date on which the print in which the name appears is offered for public sale or public distribution.

No author's copy, and no excerpt from any publication distributed privately before such publication is offered for public sale or public distribution, has been accepted.

In the case of privately printed books, entries taken from them are distinguished by the words [*auct. typ.*].

In all cases where the date is doubtful and cannot be definitely ascertained, the date figures are enclosed in brackets [], or have some other distinguishing mark—*e.g.*, ?—placed against them.

In the case of plates appearing before the text, the date of each is given if ascertainable (*e.g.*, Schreber's 'Säugethiere'), but in no case is the date of a plate accepted in preference to the date of text, for the reasons which follow:—

The figure depicted on a plate may, or may not, be the drawing intended by the author; it is the work of the artist, who is also responsible for the descriptive legend. In numerous instances the descriptive legend on a plate is quite erroneous, and has been repudiated by the author in his text. Until the text descriptive of a plate appears, the names on the plate must be considered as *nomina nuda*, and it is open to anyone to describe and rename such *nomina nuda*.

Species "indett.," if figured, are included in the index.

Misprints are quoted only if considered liable to cause confusion.

The following is an example of the Index as proposed to be carried out. The inclusion of an alphabetical list of species under each genus name is a matter for consideration, if ever the MS. comes to the printing office. It can be adopted or rejected at option, and if adopted the duplicate set of slips will be available for the purpose.

In arranging the Index for printing it is proposed to print one alphabetical list from beginning to end; the species names and the genus names falling into one order according to the arrangement of their spelling. The following are the reasons for arranging the work under species and not under genera, as in the 'Index Kewensis':—

1. No synonymy of species is attempted: that depends on the idiosyncrasy of the systematist.
2. Any attempt at specific synonymy would be fatal to progress, as experience shows that vast changes may take place in a single year.
3. An arrangement under species permits of a generic synonymy, for by running the eye down the second column of the printed work, it will be possible to ascertain the various generic names with which a particular species name has been connected.

Acervulina, <i>M. Schultze, Org. Polyth.</i> 67.	Rh. 1854.
[acinosa; creta; globulosa; inharens.]	
acinosa Acervulina, <i>M. Schultze, Org. Polyth.</i> 1854, 67.	
acuta Alveolina, <i>Savi & Meneghini, Cons. geol. Tosc.</i> 1851, 206.	
Alveolina, <i>A. D. d'Orbigny, Ann. Sci. Nat.</i> vii. 306.	Rh. 1826.
[acuta; bosci; bulloides; compressa; costulata; cylindrica; decipiens; depressa; ellipsoidalis; elliptica; elongata; eximia; fortisii; etc.]	
Archiacina, <i>Munier-Chalmas, B. S. géol. Fr.</i> [3] vii. 445.	Rh. 1879.
[armorica; munieri.]	
armorica Archiacina (d'Arch.), <i>Munier-Chalmas, B. S. géol. Fr.</i> [3] vii. 1879, 445. [Cyclolina.]	
— Cyclolina, d'Archiac, <i>B. S. géol. Fr.</i> [2] xxv. 1868, 376.	
Cyclolina, <i>A. D. d'Orbigny, Foram. Vien.</i> 139.	Rh. 1846.
[armorica; carinata; cretacea; dufrenoyi; impressa; pedunculata; præalta.]	

The group and date of the genus are shown by the "Rh. 1854" = RHIZOPODA, 1854.

From this description of the 'Index Generum et Specierum Animalium,' it will be seen that a manuscript comprising 130,000 references is already in existence and is available for daily reference.

Sir Wm. Flower, Dr. Günther, and Dr. Woodward took so much interest in the original scheme that they at once offered the necessary space and cabinets for the storage of the manuscript at the British Museum (Natural History)—an offer of considerable value, as it not only renders the MS. easily accessible to those wishing to consult it, but ensures safety from fire and other destructive agencies. The General Committee of the British Association

have been generous enough to assist the work by a donation of £70. This has been of considerable assistance in the purchase of paper, material, &c.

A manuscript of this nature is necessarily imperfect for any one genus until the whole literature has been gone through. As far as possible it is compiled from 1758 upwards, but often a side issue takes the compiler on even into the present year. Every book when completed is ticked off in some well-known Catalogue, and a catalogue slip is made, so as to allow of an alphabetical register.

It is believed that the plan adopted for preparing an 'Index Generum et Specierum Animalium' is so arranged and so carried out that the work is completed day by day so far as it goes, and that it would be easy for any individual to continue the carrying out of the scheme to-morrow should there be occasion to do so.

2. Remarks on the Dentition of Snakes and on the Evolution of the Poison-fangs. By G. A. BOULENGER, F.R.S.

[Received May 26, 1896.]

By the researches of Mr. G. S. West on the buccal glands of Snakes, the results of which appeared in the last volume of these 'Proceedings' (1895, p. 812), a further blow has been dealt to the taxonomic division of Snakes into poisonous and non-poisonous, a division I may claim to have been the first to abandon¹.

Certain statements in the above-mentioned paper, concerning the dentition, call for criticism. In the Introduction to the first volume of the 'Catalogue of Snakes,' it was pointed out that the indication of the number of teeth should refer to the full set in each maxillary, as "few specimens show the complete dentition, gaps occurring here and there, but shallow sockets in the bone indicate the bases of the missing teeth." This has not been taken into consideration by Mr. West, who erroneously ascribes diastemata between the solid teeth to *Leptodira*, these being simply due to loss of teeth in the specimen examined by him; the maxillary teeth form an uninterrupted series in that genus. Besides, it will be seen, by comparing his statements and figures with the indications in the 'Catalogue of Snakes,' that, in most cases, the number of teeth given by him is lower than the actual full set. The error I point out is an important one, since, were the teeth counted in that manner, hardly any two specimens of the same species would show the same number. It even often happens that every alternate tooth having dropped out, the jaw appears, on a superficial exami-

¹ My views have been accepted by Prof. Cope, who, in his latest classification (Tr. Amer. Philoa. Soc. xviii. 1895, p. 186), observes: "One result is that I am able to confirm the conclusion of Boulenger, *i. e.* that the Colubriiform venomous Snakes, the Proteroglypha, do not differ in any fundamental respect from the non-venomous Colubridæ." Dr. Günther (Biol. C.-Am., Rept. 1895), on the other hand, still adheres to the old arrangement, as evinced by his continuing to intercalate the Boidæ, the most generalized of all Ophiidians, between the Opiethoglypha and the Proteroglypha.